



## ABSTRACT OF THE DISCLOSURE

A method for obtaining a global optimal solution of general nonlinear programming problems includes the steps of first finding, in a deterministic manner, all stable equilibrium points of a nonlinear dynamical system that satisfies conditions (C1) and (C2), and then finding from said points a global optimal solution. A practical numerical method for reliably computing a dynamical decomposition point for large-scale systems comprises the steps of moving along a search path  $\varphi_t(x_s) \equiv \{x_s + t \times \hat{s}, \quad t \in \mathbb{R}^+\}$  starting from  $x_s$  and detecting an exit point,  $x_{ex}$ , at which the search path  $\varphi_t(x_s)$  exits a stability boundary of a stable equilibrium point  $x_s$  using the exit point  $x_{ex}$  as an initial condition and integrating a nonlinear system to an equilibrium point  $x_d$ , and computing said dynamical decomposition point with respect to a local optimal solution  $x_s$  wherein the search path is  $x_d$ .